

Appendix J

ARCHITECTURE AND CONSTRUCTION YOUTH APPRENTICESHIP

REQUIRED SKILLS CURRICULUM UNITS 1-2

Unit 1: Required Skills

Core Skills

Competency

1. Apply academic knowledge

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Reads and comprehends work related materials
- Applies mathematical operations involving whole numbers, fractions, decimals, percentages, formulas and methods of measurement accurately when necessary
- Interprets charts, tables, and graphs

Learning Objectives

MATH

- Add, subtract, multiply, and divide whole numbers, fractions, decimals and percents
- Calculate averages, ratios, proportions, and rates
- Convert decimals to fractions, fractions to percents and vice versa
- Measure and accurately report measurements of time, temperature, length, width, height, width, perimeter, area, volume, and weight
- Use appropriate formulas
- Convert measurements correctly (e.g., English (standard) to metric)
- Interpret meaning from data
- Correspond the correct number of significant figures in given values to the measuring device

ENGLISH

- Use standard English to compile information and prepare written reports
- Apply English language correctly (spelling, grammar, structure)
- Derive meaning from text through summarizing
- Discern meaning from written word
- Use acceptable language
- Write legibly

SCIENCE

- Explain the key elements of the scientific process
- Define the differences in qualitative and quantitative measurements
- Compare and contrast subjective and objective information
- Discriminate between fact and opinion
- Describe the basic engineering and architectural principles in structures
- Explain physical principles such as forces, friction, and energy

Comments:

Unit 1: Required Skills

Core Skills

Competency

2. Apply career knowledge

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Demonstrates understanding of career development in the Architecture & Construction industry
- Obtains necessary skills and knowledge to meet position requirements

Learning Objectives

- Explain the process for seeking employment
- Describe the major functions and duties of the career pathways within the Architecture & Construction career cluster
- Discuss educational, training, and credentialing requirements for a selected job
- Research job requirements and characteristics of a selected job
- Contrast "positive" and "less positive" aspects of a selected job
- Describe opportunities for advanced training in Architecture & Construction careers

Comments:

Unit 1: Required Skills

Core Skills

Competency

3. Apply Architecture & Construction industry knowledge

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Demonstrate Architecture & Construction industry systems understanding based on ***current knowledge & training***
- Comply with specifications, regulations, and codes during a design process
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Learning Objectives

SYSTEMS, PRINCIPLES, CONCEPTS

- Describe how weight and mass relate to supports
- Describe the basic process for building a residential or commercial structure
- List the basic components of constructing a residential or commercial structure such as frame, foundation, roof, floor, walls, windows/doors, stairs, systems, etc.
- Explain the sequence of events for constructing buildings
- List the phases of the architectural planning process- initial contact, preliminary design studies, initial working drawings, final design considerations, completion of working drawings, permit procedures, and job supervision
- Identify the four most common materials used in the construction of residential and commercial building: wood, steel, masonry, and concrete

HISTORY & TRENDS

- Connect historical architectural and civil engineering achievements to current structural and design applications
- Explain how historical innovations have contributed to the evolution of civil engineering and architecture

Comments:

Unit 1: Required Skills

Core Skills

Competency

4. Communicate effectively

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Delivers coherent verbal messages in words that can be understood
- Uses appropriate and bias-free language
- Uses appropriate body language
- Listens actively to others
- Demonstrates courtesy with self-introduction
- Responds to inquiries or statements within the scope of current responsibilities and understanding
- Does not provide confidential information without appropriate authorization
- Does not overreact in response to anger
- Records information in a timely manner
- Records written information legibly and accurately
- Organizes and compiles messages, technical information, and summaries accurately
- Uses email, the Internet, printer, copier, scanner, and fax machine equipment appropriately as applicable
- Is sensitive to special, multicultural, and/or multilingual needs

Learning Objectives

GENERAL

- Compare verbal and nonverbal behaviors
- Explain how empathy and bias can be communicated verbally & non-verbally

LISTEN

- Discuss effective and active listening skills
- Differentiate between hearing and listening

WRITTEN

- Discern meaning from written instructions
- Write clearly to communicate written ideas
- Discuss common recording errors and how to avoid them

CUSTOMER

- Identify internal and external customers at your facility
- Discuss steps to assess customer understanding
- Describe the steps to follow when dealing with complaints

TOOLS

- Describe technology used in communicating such as, telephone, texting, instant messaging (IM), computers, fax, intercom, beepers, tube systems, etc.
- Explain the proper use and etiquette required for these forms of communication technology

- Review the policies and procedures for using written communication tools in your company such as email, Internet, printer, copier, scanner, and/or fax

Comments:

Unit 1: Required Skills

Core Skills

Competency

5. Communicate effectively on the phone

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Answers the telephone promptly
- Follows company guidelines for identifying self
- Greeting is pleasant and courteous
- Determines purpose of call
- Transfers call to appropriate individual when necessary
- Listens carefully to caller before giving any response
- Does not provide confidential information without appropriate authorization
- Uses appropriate language
- Minimizes the time caller is put on hold
- Ends conversation with courteous closure
- Records telephone conversation and/or takes messages accurately

Learning Objectives

- Explain how to use the telephone in your company to place callers on hold and to transfer calls
- Describe voice qualities that convey pleasantness
- Describe the proper telephone answering procedure
- List the types of questions or information received from a telephone call which should be referred to the worksite professional
- Emphasize the importance of accuracy in taking telephone messages
- Detail some uses of the company telephone which would be considered unethical
- Describe the use of telephone documentation/logs required by some departments/facilities

Comments:

Unit 1: Required Skills

Core Skills

Competency

6. Act professionally

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Follows oral and written instructions
- Is pleasant, courteous, and professional with coworkers and internal and external customers
- Appearance and dress are appropriate according to the requirements of the employer
- Takes personal responsibility for attendance
- Is punctual
- Begins work promptly
- Organizes and prioritizes tasks efficiently
- Exhibits positive attitude and commitment to task at hand
- Completes assigned tasks accurately and in a timely manner
- Takes responsibility for actions and decisions
- Recognizes lack of knowledge and seeks help from information sources
- Evaluates work goals periodically with worksite professional
- Accepts constructive criticism and applies suggestions
- Communicates safety, training, and job-specific needs
- Adheres to safety rules and regulations

Learning Objectives

- Locate and explain written organizational policies, rules and procedures to help employees perform their jobs
- Locate and explain your company's employee manual for policies on Appearance, Breaks, Time Off, Cell Phone Use, Weather, Personal Issues, etc.
- List qualities of successful Architecture & Construction employees
- Describe how you can demonstrate enthusiasm and commitment at the worksite
- Define initiative
- Explain ways that you can show initiative at a worksite
- Explain methods to evaluate work assignments and prioritize them
- Describe how to effectively receive feedback

Comments:

Unit 1: Required Skills

Core Skills

Competency

7. Demonstrate customer service skills

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Is knowledgeable about products and services
- Addresses the customer, either in person, by telephone, e-mail or other means
- Gathers information about customer's needs, and customer's knowledge of products or services
- Responds to customer's comments and questions
- Solicits supervisor or co-worker support and advice when necessary to meet customer needs
- Coordinates as needed with other services to expedite delivery of service or product
- Handles complaints tactfully without insult or conflict

Learning Objectives

- Define customer service
- Identify internal and external customers at your facility
- Describe how customer service affects a company's "bottom line"
- Describe standards of service
- List strategies for maximizing customer satisfaction
- Describe the functions of other departments or units to serve the customer
- Describe the steps to follow when dealing with complaints
- Identify customer service methods to use when encountering an angry customer
- Review material pertaining to products and services produced by your department or company

Comments:

Unit 1: Required Skills

Core Skills

Competency

8. Cooperate with others in a team setting

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Demonstrates respect relating to people
- Contributes to a group with ideas, suggestions, and effort
- Listens and responds appropriately to team member contributions
- Works collaboratively with people from other backgrounds/cultures
- Resolves differences for the benefit of the team
- Completes their share of tasks necessary to complete a project

Learning Objectives

- Explain the functions of each department or unit within the larger organization
- Identify roles found in teams such as leader, facilitator, recorder, etc.
- List effective meeting management skills
- Demonstrate techniques which show respect for others
- Describe how to effectively give and receive feedback
- Describe conflict resolution methods
- Discuss ways to participate within a team setting
- Explain how to interact appropriately with diverse ethnic, age, cultural, religious, and economic groups in different situations
- Describe how work teams coordinate work flow and help manage resources

Comments:

Unit 1: Required Skills

Core Skills

Competency

9. Think critically

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Recognizes the existence of a problem
- Applies problem-solving steps
- Differentiates between fact and opinion
- Considers other viewpoints and perspectives
- Applies the principles and strategies of organized thinking
- Evaluates information, ideas, and problems
- Collects information through probing questions and research
- Defines the problem
- Uses techniques such as brainstorming to acquire alternative solutions
- Demonstrates comparison skills
- Makes decisions based on analysis
- Presents ideas for critical evaluation
- Supports viewpoints with evidence

Learning Objectives

- Describe how to break a problem down in order to brainstorm, evaluate, and analyze possible solutions
- Discuss the difference between fact and opinion
- Discuss data collection techniques for the problem solving process
- Describe how to present a solution with evidence
- Explain ways to reach a decision by consensus
- Discuss methods to evaluate a solution that has been implemented

Comments:

Unit 1: Required Skills

Core Skills

Competency

10. Exhibit regulatory and ethical responsibilities

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Follows all safety and worksite standards and regulations including those required by the Occupational Safety & Health Administration (OSHA) and the Environmental Protection Agency (EPA)
- Performs legally and ethically by all local, state, and national standards
- Uses email, the Internet, printer, copier, scanner, and fax machine equipment appropriately and correctly as applicable
- Operates within scope of authority adhering to company rules, regulations, and policies as established in employee handbook/procedures
- Complies with legal requirements for documentation
- Documents work processes as required
- Records and files appropriate documents in timely manner
- Maintains confidentiality of company, customer, and co-worker information
- Documents reportable incidents to worksite professional immediately, if applicable
- Receives, handles, packages, and ships materials and product according to shipping laws and regulations if applicable

Learning Objectives

GENERAL

- Explain the role of the government in regulating and managing the Architecture & Construction industry
- Discuss the purpose of building codes
- Compare national, state and local regulators that oversee the Architecture & Construction industry: Construction Specification Institute (CSI), American Institute of Architects (AIA), Wisconsin state building code, local building ordinances, Occupational Safety and Health Administration (OSHA), etc. as applicable
- Identify the management structure and employees' roles within your organization
- Describe common legal requirements that must be met in Architecture & Construction facilities
- Describe your legal responsibilities, limitations, and implications for action in your job role
- Identify the rules and regulations of the company as they relate to the employee
- Identify penalties for regulation non-compliance
- Compare and contrast behaviors and practices that could result in liability or negligence
- Explain legal issues faced by Architecture & Construction professionals
- Summarize the rights and responsibilities of Architecture & Construction workers
- Explain what situations are reportable in Architecture & Construction facilities

ETHICAL

- Explain the difference between an ethical practice and a legal responsibility
- Identify current ethical issues common to the Architecture & Construction field
- Describe ethical work values such as confidentiality, productivity during the day, following safety standards
- Define and discuss the concept of intellectual property
- Explain fundamentals of patents, trademarks, copyrights, and proprietary information

SAFETY

- Define legal and ethical responsibilities for safety procedures
- Describe the certification/license requirements to operate specific equipment or perform specific functions

RECORDS

- Identify the main functions of documents and documentation
- Identify the guidelines for retaining common documents
- Describe common contract language related to Architecture & Construction

Comments:

Unit 1: Required Skills

Core Skills

Competency

11. Use basic technology

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Uses communication technology (such as pagers, radios, phone, fax, email, Internet) to access and distribute data and other information within the scope of the job
- Follows rules for proper computer and communication technology usage
- Uses calculating tools such as a computer, calculator, and adding machine correctly
- Enters, edits, and stores data on computerized equipment according to worksite guidelines
- Verifies data entry prior to data storage or equipment operation
- Uses computer applications to solve problems

Learning Objectives

- Identify the parts and functions of a computer system using correct terminology including the keyboard, monitor, mouse, printer
- Point out the storage device locations on the computer such as the Hard drive, Floppy drive, CD-ROM drive, and Portable File Storage drive, etc
- Show the appropriate connections and positioning of peripheral devices such as a mouse, keyboard, monitor, portable devices, and printer
- Discuss the importance of backing up computerized files
- Compare different forms of communications technology including email, texting, word processing, spreadsheets, database, presentation software, and use of the internet to communicate, search and display information
- Describe how to evaluate internet web sites and information for validity and reliability
- Explain appropriate and inappropriate uses of email and internet while at work
- Describe how to develop effective presentations using appropriate technologies (e.g., tables, charts, and visual graphics)
- Explain the use of writing/publishing/presentation applications
- Describe how database and spreadsheet technology is used at your worksite to manage worksite operations

Comments:

Unit 1: Required Skills

Core Skills

Competency

12. Use resources wisely

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Follows the facility pollution/waste prevention plan
- Recycles whenever possible
- Disposes of materials appropriately
- Disposes of hazards legally and with regard to environmental impact

Learning Objectives

- Identify current environmental issues affecting the Architecture & Construction industry
- Determine effects of environmental issues on the Architecture & Construction Lab industry
- Define what is meant by making “green” choices
- Compare renewable and nonrenewable natural resources
- Explain the meaning of sustainable resources use
- Identify practices that contribute to sustainability
- Describe why wise use of resources at the worksite is important
- Give examples of wasteful uses of resources (unnecessary waste and duplication) at the worksite
- Explain how your choices of resources impact your department, your facility, your environment and the planet
- List materials that can be recycled
- Describe materials that require special disposal
- Explain purpose of pollution control systems
- Relate power generation to energy sources
- Compare environmental impact of energy sources (e.g., fuel cells, chemical, wind, hydro, nuclear, electric, mechanical, solar, biological)

Comments:

Unit 2: Required Skills Safety

Competency

1. Follow personal safety requirements

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Participates in all required safety training
- Follows all worksite guidelines for personal safety
- Applies principles of proper body mechanics when necessary
- Reports any exposures, injuries, or accidents, personal or to others, immediately, if applicable
- Locates and can find key information on Material Safety Data Sheets (MSDS)
- Handles and disposes of any hazardous materials appropriately, if applicable
- Operates only equipment that he/she is trained on
- Adheres to equipment safety standards
- Visually inspects equipment to ensure safety compliance and function before operation
- Wears the required Personal Protective Equipment (PPE) at all times as required by the worksite for specific tasks

Learning Objectives

- Discuss the regulatory purpose and responsibility of the Occupational Safety and Health Administration (OSHA)
 - List your rights as a worker according to OSHA
 - Explain the procedure to follow in case of an exposure, injury, or accident to self or to another
 - Explain ways your company prevents accidents
 - List engineering controls that are taken to protect workers from accidents
 - Describe safe and unsafe work habits and their implications
 - List safety hazards common in your facility
 - Explain potential hazards associated with blood borne pathogens
 - Explain the ergonomic impact of work techniques
 - Describe proper techniques for lifting loads
 - Describe the Material Safety Data Sheet (MSDS) and its purpose
 - Discuss the procedures of handling & disposing of hazardous material
 - List mechanical, chemical, electrical, compressed air, and equipment safety hazards at your facility
 - Explain how Lock Out/Tag Out procedures prevent accidents
 - Define the Personal Protective Equipment (PPE) required for specific tasks in your facility
 - Explain the safe use of ladders
 - Describe ways to prevent burns
- Demonstrate safe use of equipment you will commonly use

Comments:

Unit 2: Required Skills

Safety

Competency

2. Maintain a safe work environment

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Complies with posted safety warnings and symbols
- Identifies unsafe conditions and/or work habits and reports them to the worksite professional immediately, if applicable
- Helps maintain a clean and safe working environment free of debris and obstacles
- Cleans, organizes, puts away items in the work area
- Safely identifies, handles, stores, and uses hazardous materials according to company procedure, if applicable
- Reports any indications of insects or pests

Learning Objectives

- List the major components of a facility safety program
- List the different state and federal agencies that provide regulatory oversight at your facility for personal safety, environmental safety, and equipment safety
- List accident and fire prevention techniques
- Describe posted safety warnings and symbols and what they mean
- Describe safe and unsafe work habits and their implications
- Discuss the importance of keeping the work area and tools/equipment clean
- List mechanical, electrical, and equipment safety hazards at your facility
- Discuss how to identify and report unsafe conditions in your facility
- Discuss safety procedures to prevent accidents
- Describe the requirements at your facility for safety training and auditing
- Assess need for good housekeeping practices
- List accident and fire prevention techniques
- List hazards that contribute to injury due to slips, trips, or falls
- Outline compliance requirements of sanitation and health inspections

Comments:

Unit 2: Required Skills

Safety

Competency

3. Demonstrate professional role to be used in an emergency

Performance Standard Condition

Competence will be demonstrated

- at the worksite and classroom

Performance Standard Criteria

Performance will be successful when the learner:

- Participates in emergency safety simulations and drills
- Outlines the company's policy and procedure for worksite incidents, accidents, electrical, fire, tornado, bomb threats, robbery, hostage situations, and other emergency situations
- Identifies the closest fire alarms and emergency exits in the assigned worksite area
- Identifies the fire extinguishers in the assigned worksite area
- Identifies appropriate alarms and procedures for using alarms
- Contacts emergency personnel according to company requirements in the event of an emergency
- Documents any emergency incidents according to company requirements

Learning Objectives

- Describe the procedures in your company to report an emergency
 - Review your company procedures for responding to exposures, injuries, accidents, spills, fire, tornado, bomb threat, robbery, hostage situations, etc.
 - Demonstrate how to use the fire blanket and/or fire extinguisher
 - Explain the evacuation plan for the worksite
 - Indicate the demeanor necessary during an emergency
 - Identify methods to cope with emergency situations
 - Name the resources for assistance in crimes or accidents
 - Locate and explain use of first aid emergency care kits
 - Detail steps to use in medical emergencies requiring First Aid, CPR, and/or Heimlich maneuver
 - Locate and explain use of spill kits, if applicable to worksite
 - Explain who in your facility can give first aid care in the event of an emergency
 - Explain the local protocols in place with local law enforcement
 - Explain the role of the Hazardous Materials (HAZMAT) team
 - Detail how to access help in a robbery or terrorist situation
- Explain the use of safety equipment such as eyeball washers and chemical safety showers and when you would use them

Comments: